

Oracle SQL

e-Learning Course



COURSE MODULES

Module 1: Introduction to Oracle SQL

- Overview of Oracle Database
- SQL vs. PL/SQL vs. NoSQL
- Installing Oracle Database & SQL Developer
- Connecting to Oracle Database

Module 2: SQL Basics

- SQL Data Types
- DDL (Data Definition Language)
 - CREATE, ALTER, DROP
- DML (Data Manipulation Language)
 - SELECT, INSERT, UPDATE, DELETE
- TCL (Transaction Control Language)
 - COMMIT, ROLLBACK, SAVEPOINT
- DCL (Data Control Language)
 - GRANT, REVOKE

Module 3: Querying Data with SELECT

- SELECT Statement Basics
- Using DISTINCT
- ORDER BY Clause
- Filtering with WHERE Clause
- Using BETWEEN, IN, LIKE, and IS NULL
- Sorting & Pagination

Module 4: SQL Functions

- Single-Row Functions:
 - Character Functions (UPPER, LOWER, REPLACE)
 - Number Functions (ROUND, CEIL, FLOOR)
 - Date Functions (SYSDATE, LAST_DAY)
 - Conversion Functions (TO_CHAR, TO_DATE)
- Aggregate Functions:
 - SUM, AVG, MIN, MAX, COUNT
- Group By & Having Clause



Module 5: Joins & Subqueries

- Types of Joins:
 - INNER JOIN, LEFT JOIN, FULL JOIN, etc.,
- Self Joins
- Subqueries (Single-Row & Multi-Row)
- Correlated Subqueries
- EXISTS vs. IN
- WITH Clause (Common Table Expressions)

Module 6: Advanced SQL Concepts

- Views (CREATE, UPDATE, DROP)
- Materialized Views
- Indexes (B-TREE, BITMAP)
- Sequences & Synonyms
- Partitions (Range, List, Hash, Composite)
- Hierarchical Queries (CONNECT BY, START WITH)

Module 7: Performance Tuning

- SQL Execution Plan
- Optimizing Queries using Indexes
- Hints (/*+INDEX*/, /*+FULL*/, /*+PARALLEL*/)
- Avoiding Full Table Scans
- Analyzing Query Performance with EXPLAIN PLAN

Module 8: PL/SQL Basics

- Introduction to PL/SQL
- PL/SQL Blocks (Anonymous, Named)
- Variables, Data Types & Operators
- Control Structures (IF-ELSE, LOOP, WHILE, FOR)
- Cursors (Explicit, Implicit, REF Cursor)

Module 9: Stored Procedures, Functions & Triggers

- Procedures & Functions:
 - CREATE, IN, OUT, IN OUT Parameters
- Triggers:
 - BEFORE, AFTER, INSTEAD OF Triggers
- Error Handling (EXCEPTION, RAISE)

Module 10: Oracle Transactions & Locks

- ACID Properties
- Savepoints & Rollbacks
- Locking Mechanism
- Deadlocks & Resolution



Module 11: Working with XML & JSON in Oracle SQL

- XML Queries (XMLTYPE, EXTRACT, EXISTSNODE)
- JSON Functions (JSON_QUERY, JSON_TABLE, JSON_EXISTS)

Module 12: Oracle SQL Best Practices

- Writing Efficient Queries
- Naming Conventions
- Avoiding Common Mistakes
- SQL Injection Prevention

